

Docket No. 87324.1602
Customer No. 30734

PATENT

LISTING OF THE CLAIMS

A complete listing of the claims is provided below. This listing of the claims replaces all prior versions and listings of claims in the application.

1. (Cancelled)
2. (Cancelled)
3. (Cancelled)
4. (Cancelled)
5. (Cancelled)
6. (Cancelled)
7. (Cancelled)
8. (Cancelled)
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15. (Cancelled)
16. (Cancelled)
17. (Cancelled)

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18. (Cancelled)
19. (Cancelled)
20. (Cancelled)
21. (Cancelled)
22. (Cancelled)
23. (Cancelled)
24. (Cancelled)
25. (Cancelled)
26. (Cancelled)
27. (Cancelled)
28. (Cancelled)
29. (Cancelled)
30. (Cancelled)
31. (Cancelled)
32. (Cancelled)
33. (Cancelled)
34. (Cancelled)
35. (Cancelled)

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36. (Currently Amended) A method of making a die cast product, comprising:

heating a metal to a liquid state;

cooling the liquid metal to a semi-solid state; and

injecting the semi-solid metal into a die cavity, wherein the metal is an aluminum alloy comprising:

6.5 to 8.5 percent silicon by weight;

0.6 to 1.0 percent iron by weight;

~~0.01 to~~ 0.5 percent manganese by weight;

0.35 to 0.65 percent magnesium by weight;

~~0.01 to~~ 1.0 percent zinc by weight;

~~0.01 to~~ 0.2 percent titanium by weight;

2.0 to 2.5 percent copper by weight;

~~0.01 to~~ 0.15 percent one or more other elements, wherein the one or more other elements includes lead; and

aluminum as the remainder.

37. (Previously Presented) The method of claim 36, wherein the aluminum alloy comprises 7.2 to 8.0 percent silicon by weight.

38. (Previously Presented) The method of claim 36 wherein the aluminum alloy comprises 0.6 to 0.8 percent iron by weight.

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39. (Previously Presented) The method of claim 36 wherein the aluminum alloy comprises 0.45 to 0.6 percent magnesium by weight.
40. (Previously Presented) The method of claim 36 wherein the semi-solid metal comprises round crystal formations.
41. (Previously Presented) The method of claim 36 wherein the semi-solid metal comprises globular formations.
42. (Previously Presented) The method of claim 36 wherein the semi-solid metal comprises rosette formations.
43. (Previously Presented) The method of claim 36 wherein the method further comprises ascertaining the microstructure of the semi-solid metal before injecting the metal into the die cavity.
44. (Previously Presented) The method of claim 36 wherein the die cast product comprises round crystal formations.
45. (Previously Presented) The method of claim 36 wherein the die cast product comprises globular formations.
46. (Previously Presented) The method of claim 36 wherein the die cast product comprises rosette formations.
47. (Previously Presented) The method of claim 36 wherein the die cast product comprises intermetallic particles.
- 47#. (Cancelled) The method of claim 47 wherein the intermetallic particles are entrapped in at least one of a round crystal formation, a globular formation, and a rosette formation.

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48. (Previously Presented) The method of claim 36 wherein the die cast product comprises restricted fracture paths.

49. (Previously Presented) The method of claim 36 wherein the cooling step further comprises:

forming semi-solid metal feedstock billets;

cutting the billets; and

re-heating the billets before injecting the metal into the die cavity.

50. (Previously Presented) The method of claim 49 wherein the method further comprises electromagnetically stirring the metal.

51. (Previously Presented) The method of claim 49 wherein the method further comprises chemically grain-refining the billets.

52. (Previously Presented) The method of claim 51 wherein the method further comprises heating the grain-refined billets.

53. (Previously Presented) The method of claim 36 wherein the one or more other elements is lead.

54. (Previously Presented) The method of claim 36 wherein the one or more other elements is chromium.

55. (Previously Presented) The method of claim 36 wherein the one or more other elements are lead and chromium.

56. (New) The method of claim 47 wherein the intermetallic particles are entrapped in at least one of a round crystal formation, a globular formation, and a rosette formation.